Adapting Airport Terminals for an Aging Population

OECD-MIT International Symposium – New Transportation Technology for Older People

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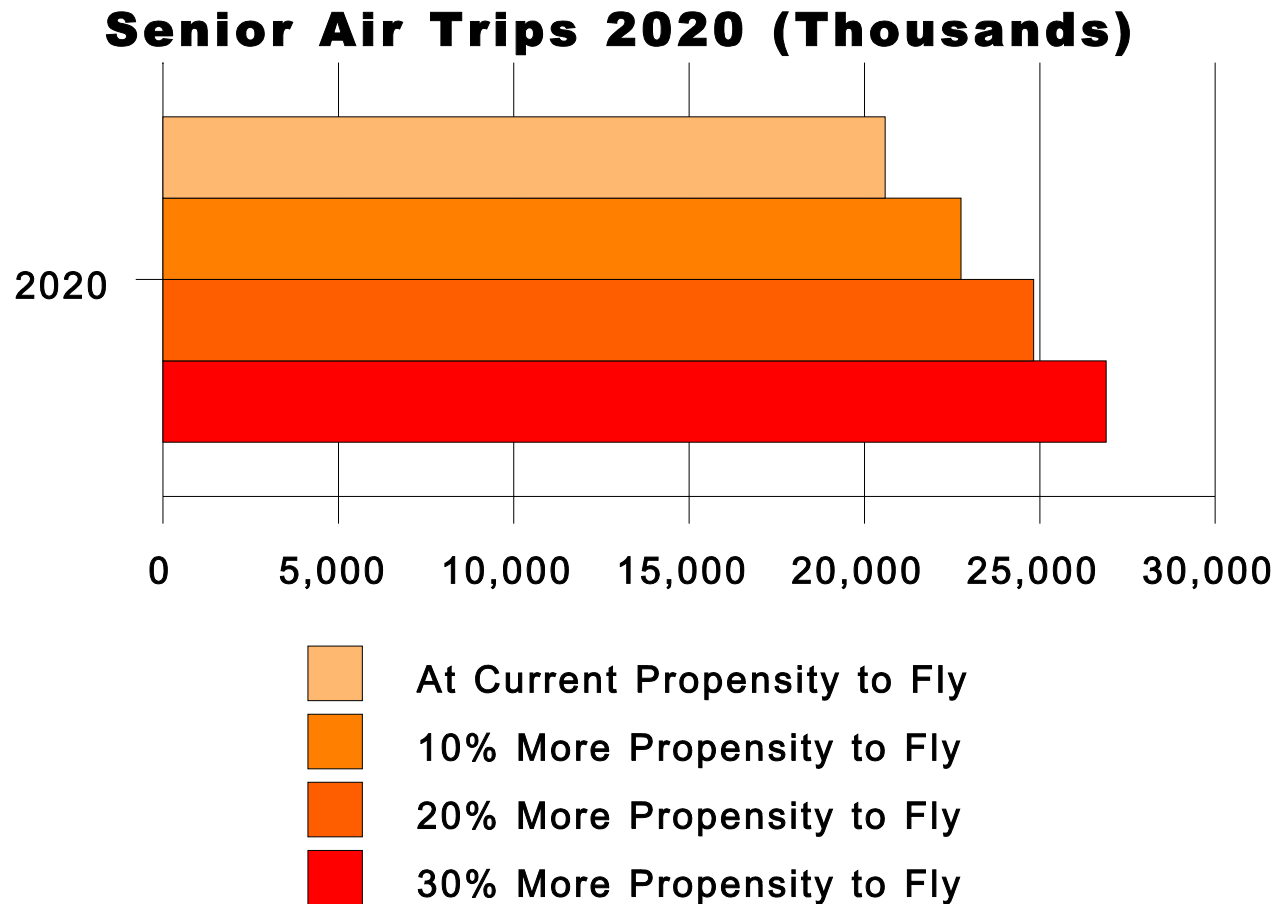
Rationale for Research

- Prior research focused on impacts of aging on ADL and enhancements to facilitate intraurban mobility

- Less research on adaptations necessary for long distance travel

- Air is dominant long distance travel mode, so it is important to adapt airport terminal design to better accommodate older persons

Age 65+ Age Cohort:2000 to 2020

- 35 million to 54 million people 65 or older in United States

- 13 - 14 million air trips by seniors to 21 million air trips

Source: Census 2000 and
American Travel Survey

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Impact of Increase in Propensity to Fly

Senior Air Trips 2020 (Thousands)

2020

0   5,000   10,000   15,000   20,000   25,000   30,000

- At Current Propensity to Fly
- 10% More Propensity to Fly
- 20% More Propensity to Fly
- 30% More Propensity to Fly

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Perspective

- Older persons don't want to be considered disabled

- Cherish independence

Analytical Methods

- Research on aging and implications for terminal design
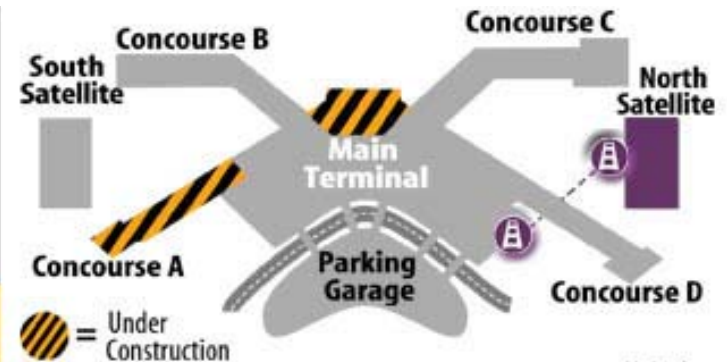
- Holding focus group

- Conducting interviews

Implications of Aging on Terminal Design

- Mobility ⟶ *Walking*
- Strength ⟶ *Waiting/lifting*
- Sight ⟶ *Signage*
- Hearing ⟶ *Messages*
- Touch ⟶ *Vending machines*
- Cognition ⟶ *Way-finding*

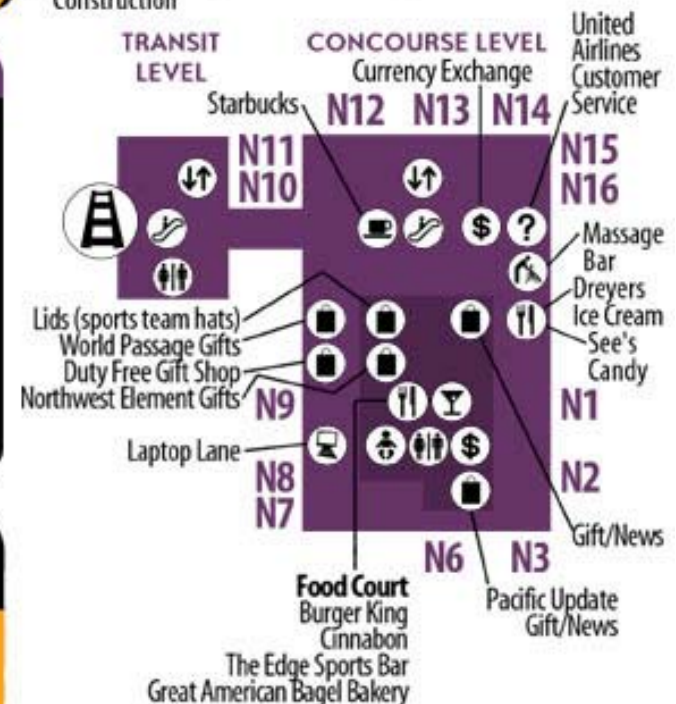# Focus Group Identified Three Major Concerns

- Way-finding

- Walking

- Waiting

Way-finding Issue: Clarity of Maps

Walking Issues

- Distance

- Change of grade

- Availability of Mobility aids
  - Carts
  - Moving sidewalks

Walking Up Grade

Waiting Issues

- Baggage check-in

- Gate check-in

- Boarding aircraft

- Security

Waiting at Security

Passenger Functions and Activities

- Instructions and way-finding
- Arrival and check-in
- Using vending machines
- Traveling to the gate
- Passing through security
- Waiting and embarking
- Arrival at destination airport
- Baggage Handling
- Exiting the terminal

Instructions and Way-Finding

- Enhancements to "You Are Here" maps- orient with axis of environment

- Enhancements to terminal signage – Color combinations, placement, size

- Use of volunteers – standardize

Arrival and Check- In

- Arrival
  - Private auto – parking to terminal
  - Public transportation – boarding
  - People mover – seating
- Check-In
  - Seating areas - supplement
  - Alternatives to queuing
    - Hand held devices
    - Reservations

Traveling to the Gate

- Traversing Vertical Space
  - Elevators - clear designation
  - Escalators - warnings on exit
  - Steps - thresholds clearly marked
- Traversing Horizontal Space
  - Moving side-walks - audible warnings
  - Carts - boarding devices
  - Resting areas along concourses

Moving Sidewalks

Passing Through Security

- Queuing - system for processing pax

- Removing personal items – more tables and chairs

- Maneuvering baggage – lifting devices

- Walking through screening devices - railings

Baggage Handling and Retrieval

- Finding and waiting for baggage – enhance signage and provide seating

- Retrieving baggage – redesign conveyor system

Resting While Waiting

Policy

- **Recommendation**: Develop airport terminal design standards for older persons and seek government support for standards

- **Implementation:** Hold multidisciplinary workshop to establish standards

Modal

- Recommendation: Evaluate airport terminals in terms of standards and identify enhancements

- Implementation: Develop airport inventory form and process working through Association of American Airport Executives (AAAE)

Table 2
Summary of Enhancements to Airport Terminals by Function

Function	Enhancement to the Terminal
Instructions and Wayfinding	Orient "You Are Here" Maps with the axis of the environment, select color combinations of sufficient contrast and avoid use of pastel colors; use text on the map of sufficient size and make maps as simple as possible
Arrival and Check-In	Use shuttle buses that have entryways at curb level or provide a platform to assist in boarding the bus; add more seating to people movers – about 20 - 25 percent of capacity; add maps and way finding aids within terminal parking garages and parking lots; provide seating curbside and/or immediately inside the terminal for seniors who use curbside check-in; provide seating near ticket counter;
Using Vending Machines	Work with manufacturers to consider design features that will standardize boarding pass machines and make them easier to use in terms of inserting a credit card or frequent flyer card, the color, size and contrast on the text on the screen, sensitivity of the screen or keyboard to touch and simplicity of instructions for use; work with manufacturers of other vending machines to consider design features that will address issues such as size of the coin slot, ease of extracting product from the vending machine, and the size of the labels or text designating product choices.
Traveling to the Gate	Paint first and last steps contrasting colors to signify the beginning and exit point of the stairway; use audible announcements at the moving walkways to provide advance warning of entry and exit points; select electric carts that are easy to board and exit; add benches in concourses as resting points where nearby seating is not already available.

Passing Through Security	Provide seats adjacent to security; add legible instruction signs above the queuing area explaining what personal belongings are required to be placed in the plastic tubs; add chairs at the security portal that can be used to remove shoes and chairs once security is cleared that can be used to put on the shoes; add larger tables for manipulating personal belongings; provide lifts to facilitate hoisting baggage on security screening conveyor belts or redesign the conveyor belts to enable the baggage to enter the device closer to floor level; place a railing near the entry to the passenger screening device.
Waiting and Embarking	Provide seats adjacent to and in full view of the gate area; provide clear instructions for boarding the aircraft; add text messaging to complement audible messages; increase lighting in the boarding bridge.
Arrival at Destination Airport	Add more and improved signs providing direction to baggage claim or ground transportation; add volunteers at gates or use airline personnel to provide directional guidance; consider location of off-airport rental car facilities in locations that will make it easier to access the roadway network.
Baggage Handling	Add seats in the baggage claim area; provide a method for moving baggage from the conveyor belt to the ground to facilitate baggage retrieval.
Exiting the Terminal	Mark path to exit door and place numbers on the inside and outside of doors; make maximum reliance of symbols on signs; provide seating near each doorway.

Research - 1

- Recommendation: Apply ITS technology to airport terminals especially to facilitate wayfinding

- Implementation: Work with TRB, Volpe Transportation Center and MIT Aging Lab to identify ITS applications and apply in a test airport

Research -2

- Recommendation: survey intercity modal splits by age regularly to gauge impact of terminal enhancements on air travel by older persons.

- Implementation: Work with the Bureau of Transportation to perform annual surveys of intercity modal splits

A Parting Thought

"Just because you can't run as fast, jump as high, or throw as far doesn't mean that you still shouldn't be able to play the game." Harry P. Wolfe, January 2003

For More Information

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